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MOBILE PRINTER AND PAPER FEEDER

Field Of The Invention

10       The present invention relates generally to printers, and more specifically, to paper feeding mechanisms and methods for mobile printers.

Background Of The Invention

15       Various sizes of paper have become standardized throughout the world for various print jobs. In the United States, business is routinely conducted with "letter" size paper, e.g., 8.5" x 11". In the past, the legal profession used "legal" sized paper, e.g., 8.5" x 14". In Europe, so-called "A4" is  
20       used which is a bit narrower and a little longer than "letter" sized paper. Photographs have standardized on 8" x 10", Hagaki, and 4" x 6" print sizes. So a commercial necessity has emerged for printers that can handle all the common sizes of paper now in use.

25       Large, desktop printers have the luxury of having interchangeable paper trays that can be specialized for each paper size. Some paper trays have adjustable fences that allow different widths of paper to be loaded in a cassette. But small, mobile printers have no slide-in cassette trays at all,  
30       and rely on a manual or gravity feed of paper from the top.

Conventional printers can lay a lot of ink on a photo paper printout, and such ink can require a few extras seconds to dry and resist smudging. When more than one photo paper sheet is being printed, the later sheets output can smudge the top ones  
5 in the output stack. So it helps if the later sheets are gently dropped flat on the stack.

SUMMARY OF THE INVENTION

Briefly, a printer embodiment of the present invention is a mobile, color printer capable of printing on letter-size plain paper and standard-size photo paper. A fold-up paper feeder acts as a cover during travel, and as a storage tray for several sheets of paper to allow automatic feeding from a vertical stack. A slotted door hinged to the back of the printer, and under the hinges for the fold-up paper feeder/cover, can be flipped up or down. In the down position, a slot on the right side guides the user to feed in photo paper in the correct location. In the up position, letter-size plain paper has full-width access to the printing mechanism, and a sliding adjustable guide on the left allows letter, A4, and other size papers to be lightly corralled on both sides.

An advantage of the present invention is that a printer is provided that is easily portable.

Another advantage of the present invention is that a printer is provided that can accommodate various sizes of paper and photo card stock.

A further advantage of the present invention is that a printer is provided that is inexpensive to produce.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1A is a perspective view of a mobile printer embodiment of the present invention showing its paper feeder/cover open, the paper support arm extended, and the photo-paper door gate folded down so the user has to feed photo paper through the slot;

Fig. 1B is a perspective view of the mobile printer of Fig. 1A showing its paper feeder/cover open, the paper support arm extended, and the photo-paper door gate folded up so the user can load letter-sized paper between the adjustable guide on the left and the fixed guide on the right;

Fig. 1C is a perspective view of the mobile printer of Fig. 1A showing photo-paper being fed through the slot in the door gate, and another piece of printed photo-paper being output from the front; and

Fig. 1D is a perspective view of the mobile printer of Fig. 1B showing letter-sized paper being fed with the door gate opened and out of the way, and with the adjustable guide on the left set for this sized paper, and another piece of paper being output from the front after printing.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Fig. 1A represents a mobile printer embodiment of the present invention, and is referred to herein by the general reference numeral 100. In one embodiment, the mobile printer

100 is generally about 13.3" x 3.2" x 6.5" and weighs about 4.2 pounds. It is capable of portable, battery powered operation. The mobile printer 100 includes a base 102 to which is hinged a paper-feeder/cover 104. In the closed position, the printer can  
5 be conveniently carried. Mobile printer 100 can accommodate plain and coated paper, labels, transparencies, Hagaki, card stock, envelopes, banner, and photo paper.

A paper support 106 can be extended to support the free end of paper loaded in the paper-feeder/cover 104. A hinged door  
10 108 has a slot 110 that allows Hagaki or other photo papers to be fed in at an optimum offset from the right edge. This offset allows printing to commence much closer to the right edge of the photo paper, and it helps the stiffer photo paper to avoid a curling device inside before a paper output slot. Such curling  
15 device curls up the left and right edges of plain bond letter size paper so the paper will cantilever out while being output, and helps prevent smearing of a previously discharged page. A color ink cartridge and inkjet printhead 114 and a black ink cartridge and inkjet printhead 116 move left and right across  
20 the paper feeding-through during each print job. A right-edge guide 118 is visible and is in a fixed position. However, the right edge of slot 110 is offset to the left from this, and the slot controls how far to the right a photo paper can be loaded in.

25 In Fig. 1B, the hinged door 108 has been flipped up to get it out of the way for the printer to receive, e.g., plain-bond letter-size paper. An adjustable left-side guide 120 can now be seen. It is slide-mounted to the underside of the hinged door 108 and is used to lightly corral the left edge of the papers

being input. The left-side guide 120 is preferably adjustable to accommodate at least letter-size paper sheets, A4-size paper sheets, and envelopes. The right-side fixed paper guide 118 lightly corrals in the right edge of such papers being input.

5 The slot 110 no longer limits access to the printing zone beneath because it is folded up out of the way.

In Fig. 1C, a Hagaki or 4" x 6" piece of photo paper 122 is shown as feeding through the slot 110. The finished, printed output is represented by a sheet 124.

10 In Fig. 1D, a letter-size sheet of paper 126 is shown as feeding directly into the printer with the door 108 folded up and the adjustable left side guide 120 properly set.. The output is represented by a sheet 128 that has had its edges 130 and 132 curled up. Such curling is impressed on sheet 128 by a  
15 pair of curling lifts inside output slot 112.

In an alternative embodiment of the present invention, the pair of curling lifts inside output slot 112 are articulated such that they retract when door 108 is folded down to receive the Hagaki or 4" x 6" piece of photo paper 122. Such photo  
20 paper is usually stiffer than bond paper 126, so the curling lifts are unnecessary. They can also significantly increase the force needed to output sheet 124 if not retracted.

The print media referred to herein includes plain paper, envelopes, coated paper, photo or glossy paper, transparency, card stock, index card, photo card, post card, hagaki card, labels, iron-on transfers, and any other suitable print media.

- 5 Print media sizes useable with embodiments of the present invention include:

A4 (210mm x 297mm),
A5 (148mm x 210mm),
A6 Card (105mm x 148mm),
B5 (182mm x 257mm),
executive (7.25" x 10.5"), legal (8.5" x 14"),
letter (8.5" x 11"),
index card (3" x 5"),
photo/post card (4" x 6"),
Hagaki card (100mm x 148mm),
6-3/4 envelope (3.25" x 6.5"),
7-3/4 envelope (3.875" x 7.5"),
#9-envelope (3.875" x 8.9"),
#10-envelope (4.125" x 9.5"),
A2 baronial (111mm x 146mm),
B5 envelope (176mm x 250mm),
C5 envelope (162mm x 229mm),
C6 envelope (114mm x 162mm),
DL envelope (110mm x 220mm) and
custom sizes (Up to 8.5" x 17", 216mm x 432mm).

- 10 Although the present invention has been described in terms of the presently preferred embodiments, it is to be understood that the disclosure is not to be interpreted as limiting. Various alterations and modifications will no doubt become apparent to those skilled in the art after having read the above
- 15 disclosure. Accordingly, it is intended that the appended claims be interpreted as covering all alterations and

modifications as fall within the true spirit and scope of the invention.

What is claimed is: